

AP20 Rec'd PCT/PTO 01 AUG 2006

Re: Box V:

Justified finding with regard to novelty, inventive step and industrial applicability; documents and statements to support this finding

1. Reference is made to the following documents:

D1: US 5 761 956 A (KAIN JEFFREY ARTHUR ET AL) 9 June 1998
 D2: US 4 080 823 A (STARGARDTER HANS) 28 March 1978
 D3: LUI T ET AL: "Transonic rotor blade pressure measurement using fluorescent paints" JOURNAL OF PROPULSION AND POWER, vol. 18, no. 2, March 2002 (2002-03), - April 2002, pages 491-493, XP008032861

2. Document D1 is regarded as the closest prior art, and discloses (the references between parentheses relate to this document): a method for determination of oscillations on a rotating blade disc (52) of a turbine (column 4, line 8), having the following steps: provision of a substance (column 3, line 64) which emits light quanta at a point on the blade disc; determination of light quanta emitted from the substance by means of a sensor (50) and evaluation of the signal from the sensor (50) in order to determine the oscillation behavior of the blade disc (52) (column 5, lines 35-40), from which the subject matter of the independent claim 1 differs by the following steps:
 - (A) Provision of a substance which emits light quanta by external excitation at at least one point on the blade disc, and transmission of radiation by means of a radiation source at the rotating blade disc and at the substance which is arranged on it, in order to externally excite it.

The subject matter of claim 1 is thus novel (PCT Article 33(2)).

3. The problem to be solved by the present invention can thus be considered that of allowing reliable determination of the oscillation behavior of the blade disc with high measurement accuracy during all operating states of the turbine. This problem is solved by the features (A). In consequence, the substance emits radiation which is always approximately the same irrespective of the operating state, thus allowing reliable determination of the oscillation behavior of the blade disc with high measurement accuracy during all operating states of the turbine.

In document D1, a passive substance is used as the light source, and emits infrared thermal radiation. The measurement accuracy is thus dependent on the operating state. In document D2, a light source and reflectors are used to determine the oscillations of blade discs, and in document D3, a fluorescent paint is used to determine pressure distributions on blade discs. The features (A) are thus not used or are not used for the same purpose in the documents D2 and D3.

The solution proposed to this problem in claim 1 of the present application is thus based on an inventive step (PCT Article 33(3)).

4. The independent apparatus claim 8 corresponds to the method claim 1 and, for corresponding reasons, meets the PCT requirements for novelty and inventive step. Claims

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY
SUPPLEMENTARY SHEET**

International application No.

PCT/EP2005/000812

2-7 and 9-14 are dependent on claim 1 and claim 8, respectively, and thus likewise meet the PCT requirements for novelty and inventive step.